



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/092,115	06/05/1998	MAUREEN A. HANRATTY	TI-25277	5690

23494 7590 08/05/2004

TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER

NGUYEN, KHIEM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/092,115

Applicant(s)

HANRATTY ET AL.

Examiner

Khiem D Nguyen

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 1998 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The non-final rejection as set forth in paper No. (16) is withdrawn in response to applicants' amendments. A new rejection is made as set forth in this Office Action.

Claims (1-7) are pending in the application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (U.S. Patent 5,837,428) in view of Anderson et al. (U.S. Patent 5,882,999) and Mishra et al. (U.S. Patent 5,798,555).

In re claims 1, 4, and 5, **Huang** discloses a method of fabrication of an integrated circuit, comprising the steps of: patterning a first layer of resist (**FIG. 2: 20a**) on a layer of antireflective coating (**FIG. 2: 18**) (col. 7, lines 18-48 and col. 8, lines 4-20 and **FIGS. 1-5**) comprising silicon oxynitride material (col. 7, lines 30-48) and which is on a layer of gate material (**FIG. 2: 16**) to define gate locations (col. 6, lines 3-18 and **FIGS. 1-5**); reducing the linewidth of the patterned layer of resist (**FIGS. 3-4: 20a'**) (col. 8, lines 4-46 and **FIGS. 1-5**) (col. 9, lines 23-57); and using the reduced linewidth patterned resist as an etch mask to form gates (**FIGS. 4-5: 16a**) from the layer of gate material (col. 10, lines 15-36 and **FIGS. 4-5**).

Huang does not explicitly disclose the steps of forming a layer of dielectric on the gates; patterning a second layer of photoresist on a second layer of antireflective coating to define interconnects; and using the patterned photoresist without linewidth reduction to form interconnects over the gates.

Anderson, however, discloses a method of fabrication of an integrated circuit comprising the steps of: forming a layer of dielectric (**FIG. 6: 32**) on the gates (**FIG. 6: 24**); patterning a second layer of photoresist (**FIG. 6: 36**) on a second layer of antireflective coating (**FIG. 6: 34**) to define interconnects; and using the patterned photoresist without linewidth reduction to form interconnects (**FIGS. 9, 14, 15: 46**) over the gates (col. 3, line 54 to col. 4, line 51). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Huang and Anderson to enable the process of defining interconnects of Huang to be performed and furthermore to minimize reflected radiation and maximize the accuracy of the pattern (col. 4, lines 41-42, Anderson).

In re claims 2 and 6, **Anderson** discloses using the patterned photoresist (**FIG. 6: 36**) as an etch mask for an underlying layer of metal (col. 4, lines 4-26).

In re claims 3 and 7, **Anderson** discloses using the patterned photoresist (**FIG. 6: 36**) as an etch mask to etch grooves (**FIG. 6: 38 and FIG. 10: 38: 39**) in underlying dielectric (**FIGS. 6 and 9: 36**) to be filled with metal (**FIGS. 8, 9, 15 and 15: 46**).

In re claim 4, neither **Huang** nor **Anderson** explicitly disclose using the reduced linewidth patterned resist as an etch mask to form dummy gates from the layer of dummy

Art Unit: 2823

gate material, forming a layer of dielectric adjacent the dummy gates, and removing the dummy gates.

Mishra et al., however, disclose in **FIGS. 1-7** and related text a method of forming a dummy gate structure with photo resists (**FIGS. 2e: 48**), reducing the width of dummy gate; forming a dielectric layer over gate (**FIG. 2g: 66, 64**); removing dummy gate (**FIG. 2i**); and a metal contact is deposited into region (**FIG. 2i: 68**). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Huang, Anderson, and Mishra in order to provide a better contact with more surface area providing an improved contact.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Art Unit: 2823

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.N.

August 3, 2004

A handwritten signature in black ink, consisting of a large, stylized 'W' followed by a cursive 'D' and 'C'.

**W. DAVID COLEMAN
PRIMARY EXAMINER**